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Technical Memorandum

To: **NSA Mid-South BRAC Cleanup Team**

From: **Robert Smith, EnSafe Inc.**

Date: **May 28, 1999**

RE: **Abbreviated Work Plan - Building N-121 Soil Sampling**

This abbreviated work plan addresses the soil sampling which will be conducted at Building N-121 as part of the building demolition. Due to the past operations conducted in this building (former plating shop), the BRAC Cleanup Team (BCT) determined that additional soil samples are needed from beneath the existing slab/building foundation.

The objective of this sampling event is to determine if the soil beneath the slab has been impacted and to determine if any release which may have occurred poses a threat (acute or chronic) to human health and/or the environment, primarily the workers involved in the site work at Building N-121.

Site Description

Building N-121 is located in the northern portion of NSA Mid-South (Attachment A) and was formerly operated as a plating shop. It is located approximately 100 feet west of Memphis Avenue (formerly Eighth Street) on the north side of Casablanca Street, and is a 4,343 square foot structure which is currently not in use.

Previous Investigations

The Building N-121 area has been the subject of three previous environmental actions associated with the former operations performed in the building.

> ***RCRA Facility Investigation*** *(SWMU 3 RCRA Facility Investigation Report; EnSafe/Allen and Hoshall, April 15, 1996)*
> The dry well associated with Building N-121 was investigated during the Assembly A RCRA Facility Investigation, with the results and findings presented in the SWMU 3 RCRA Facility Investigation Report (EnSafe/Allen & Hoshall, April 15, 1996). Based on the information contained in this report, no further action was recommended and approved by both the U.S. Environmental Protection Agency (USEPA) and the Tennessee Department of Environment and Conservation (TDEC).

Voluntary Corrective Action *(Voluntary Corrective Action Report - SWMU 3, 7, 17, 18, 19, 67, and Gasoline Pits, Rev: 02*; EnSafe, May 1999)
As part of the U.S. Navy's Installation Restoration Program, a Voluntary Corrective Action was conducted to remove the dry well associated with the plating operations at Building N-121. In 1997, the dry well was excavated, all material removed (gravel), and the area was backfilled with pea gravel and capped with concrete. Confirmation samples were collected from the floor and sidewalls of the excavation area to confirm that all impacted soil had been removed. Based on the information presented in the SWMU 3 Voluntary Corrective Action Report (EnSafe, 1999), no further action was recommended and approved by both the USEPA and TDEC.

Spill Response and Soil Removal *(Building N-121 Soil Removal and Spill Cleanup Activity Report, Rev.: 02; EnSafe, August 1997)*
In February 1997, liquid contained in a vat labeled 'Chromic Acid' was spilled on the ground outside the west end of Building N-121. Subsequently, impacted soil was removed and confirmation samples were collected. Based on the information presented in the Building N-121 Spill Report (EnSafe/Allen & Hoshall, 1997), no further action was recommended and approved by both the USEPA and TDEC.

Source Characterization
In February 1999, at the recommendation of the NSA Mid-South Public Works Department, Environmental Division (PWD-Env. Div), and in preparation for the building demolition, additional samples were collected from the interior of Building N-121. Wipe samples were collected from the surfaces of the interior walls and the fume hoods, as well as samples of the concrete lining the sumps in the middle of the building. The sample results indicated elevated levels of cadmium in the concrete from the plating room catch basin and elevated levels of cadmium, chromium, and lead in wipe samples collected from various locations throughout the building. Attachment B contains the analytical data generated during the recent sampling events.

Additional Sampling
At the request of the NSA Mid-South PWD-Env. Div., and the Southern Division of theNaval Facilities Engineering Command (SOUTHNAVFACENGCOM), additional samples will be collected from beneath the foundation of the building after the demolition of the building is completed to ensure the safety of the demolition contractor, and to confirm that no release of hazardous material to the environment has occurred. Suspect areas will be marked on the attached map prior to the demolition, using the procedures outlined below, to ensure that these areas will be able to be located after the building (and all reference points) are removed. In addition to the samples from the suspect areas, any areas exhibiting stained soil, unusual odors, or conditions that would otherwise indicate a release may have occurred will be sampled.

Sample Locations
Using the attached map (Attachment A), suspect areas will be referenced to the three groundwater monitoring wells located around the site. In addition to the monitoring wells, reference points will

be established on the concrete pad (former drywell) and any existing utility poles (if necessary). All reference points will be established after the building has been demolished, but prior to the removal of the building slab.

Suspect areas will be related to areas such as the bottom of the trenches existing in the building, cracks in the concrete flooring, and near or around floor drains and/or sumps. These are areas where a release is most likely to have occurred. Currently, the trenches and sumps contain sand which was placed there as a safety precaution. Any cracks or other breached areas will be identified after the sand is removed.

Soil Sampling Methodology

All soil samples will be collected in accordance with the *NAS Memphis Comprehensive RCRA Facility Investigation Work Plan* (EnSafe/Allen & Hoshall, 1994). Samples will be collected from 0 to 6-inches using stainless steel or disposable plastic (laboratory grade) spoons and placed in pre-cleaned sample jars of the appropriate size and type (to be supplied by the laboratory). One deviation from the above referenced comprehensive work plan is that samples collected for volatile organic compound analysis will be collected using EPA Method 5035.

Analytical Methods

Samples will be submitted to an offsite laboratory for both volatile organic compound and metals analyses (Table 1). The exact number of samples will be determined in the field, based on site conditions and field observations.

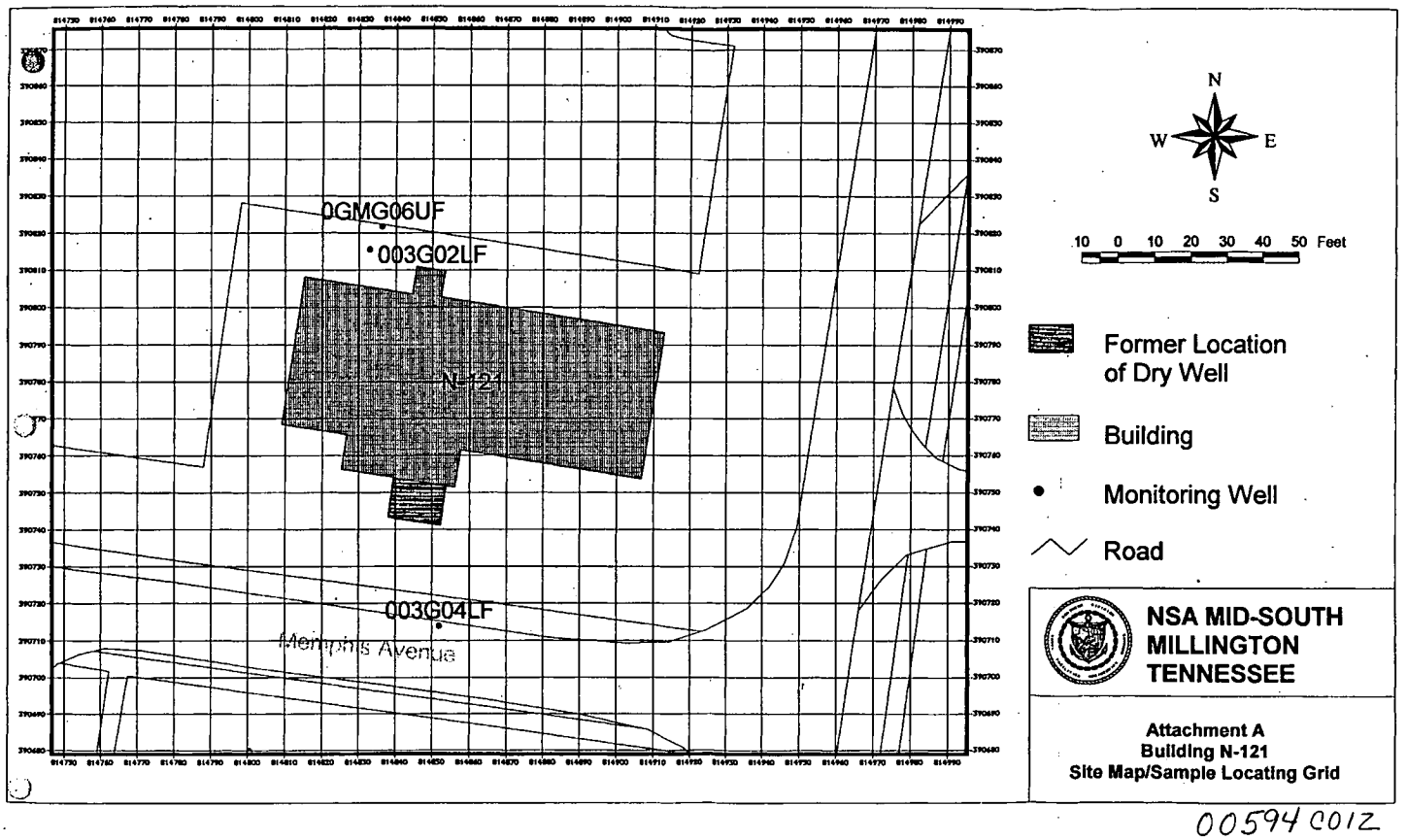
Table 1
Analytical Requirements
Building N-121 Demolition

Analytical Method	Rationale	QC Level/Rationale
Volatile Organic Compounds (EPA Method 5035)	Possible presence of chlorinated solvents due to past use as a degreasing agent in the plating shop	II/Screening level data to determine if a release of VOCs has occurred.
Appendix IX Metals (EPA Method 6010/7000 series)	Possible presence of heavy metals as a by-product of the plating operations	II/Screening level data to determine if a release of metals has occurred.

Documentation

EnSafe will generate a Technical Memorandum outlining the sample results, and the applicable action levels, and submit it to the NSA Mid-South BRAC Cleanup Team for review.

Attachment A
Building N-121
Site Map/Sample Locating Grid


0GMG06UF
003G02LF
N-121
003G04LF
Memphis Avenue
N
W
E
S
10 0 10 20 30 40 50 Feet
Former Location of Dry Well
Building
Monitoring Well
Road
NSA MID-SOUTH
MILLINGTON
TENNESSEE
Attachment A
Building N-121
Site Map/Sample Locating Grid

00594 C012

Attachment B
Building -121
Wipe Samples Analytical Data

3.11 Building N-121

Asbestos-Containing Material Survey for Building N-121

Building N-121 consists of a one-story building, constructed in 1943. This 4,343 square foot metal hangar was previously used as a plating shop. The space is largely open with one room that was used for plating. The catch basins located within the plating room have been filled with sand. Four exhaust hood ducts remain in this room. Small concrete block storage sheds are located on two sides of the building. A total of 12 bulk samples were collected from 4 distinct suspect-ACM homogeneous areas (HA's) identified on the interior and exterior of the building. 2 HA's consisted of one or more layers containing greater than 1% asbestos. The following table presents a summary of ACM identified:

HA No.	Material Description	Approximate Location	NESHAP Category	OSHA	Approx. Quantity
1	Caulking on exhaust duct	Exhaust hood	RACM	Class II	50 LF
2	Interior window putty	All windows	RACM	Class II	550 LF

Preliminary Wastestream Characterization for Building N-121

- **Description:** Building N-121 consists of a one-story building, constructed in 1943. This 4,343 square foot metal hangar was previously used as a plating shop. The space is largely open with one room that was used for plating. The catch basins located within the plating room have been filled with sand. Four exhaust hood ducts remain in this room. Small concrete block storage sheds are located on two sides of the building.

- **XRF Testing:** A total of 34 XRF readings were obtained from the major components identified in this building. LBP was identified on the wooden support beams of both storage sheds. Yellow safety paint (LBP) was identified within the building. No metal components painted with LBP were identified.

- **Lead TCLP Results:** Two representative composite samples were collected for TCLP analysis. Two additional TCLP samples, three paint chip samples, and six wipe samples were also collected. The following table contains only the lead TCLP results. Results and conclusions for the additional samples can be found on the following pages.

Sample ID	Sample Description	Lead TCLP Results (mg/L)
NSAM-N121-TCLP-26 (analyzed for RCRA metals)	Representative composite sample composed of 20 cores collected from various building components: 6 interior walls, 4 exterior walls, 4 floors, and 4 ceilings, 1 door and 1 window.	<0.5
NSAM-N121-TCLP-33 (analyzed for lead only)	Representative composite sample composed of 20 cores collected from various building components: 6 interior walls, 4 exterior walls, 4 floors, and 4 ceilings, 1 door and 1 window.	<0.5
	Mean	0.5
	Standard Deviation	0.1
	80% Upper Confidence Limit	0.6

- **Conclusions:** These TCLP test results suggest that the anticipated wastestream generated from the demolition of this building would be characterized as a non-hazardous solid waste.

- **Additional TCLP Sample Results**

Sample ID	Sample Description	Multi-element TCLP Results (mg/L)	
NSAM-N121-TCLP-26	Representative composite sample composed of 20 cores collected from various building components: 6 interior walls, 4 exterior walls, 4 floors, and 4 ceilings, 1 door and 1 window.	Silver	<0.5
		Arsenic	<0.5
		Barium	<10.0
		Cadmium	<0.1
		Chromium	<0.5
		Lead	<0.5
		Selenium	<0.1
		Mercury	<0.02
NSAM-N121-TCLP-27	Black stained concrete near storage shed.	Silver	<0.5
		Arsenic	<0.5
		Barium	<10.0
		Cadmium	<0.1
		Chromium	<0.5
		Lead	<0.5
		Selenium	<0.1
		Mercury	<0.02
NSAM-N121-TCLP-28	Sand from plating room catch basin.	Silver	<0.5
		Arsenic	<0.5
		Barium	<10.0
		Cadmium	<0.1
		Chromium	<0.5
		Lead	<0.5
		Selenium	<0.1
		Mercury	<0.02
NSAM-N121-TCLP-34	Concrete from plating room catch basin.	Silver	<0.5
		Arsenic	<0.5
		Barium	<10.0
		Cadmium **	**0.9**
		Chromium	<0.5
		Lead	<0.5
		Selenium	<0.1
		Mercury	<0.02

- **Conclusions for Multi-Element TCLP Results:** These results suggest that the materials sampled would be determined to be non-hazardous solid wastes with respect to the eight RCRA metals. Note that the concrete from the catch basin (sample # 34) contained a level of cadmium, which approaches the regulatory threshold of 1.0 mg/L. This sample was collected from the upper surface of the catch basin without excavating the sand filler. It is possible that higher concentrations of metals might exist in the concrete under the sand filler.

- **Paint Chip Sample Results**

Total RCRA Metals (mg/kg)

Sample ID	Sample Description	As	Ba	Cd	Cr	Hg	Pb	Se	Ag
NSAM-N121-Paint-1	Composite sample of interior wall paint from the plating room.	< 8	4,900	28	944	< 0.01	18,200	< 5	3
NSAM-N121-Paint-2	Composite sample of interior wall paint from room adjacent to plating room.	< 8	965	9	645	< 0.01	3,740	< 5	< 2
NSAM-N121-Paint-3	Exterior LBP found on wood beams of the exterior storage sheds.	< 8	140	11	297	< 0.01	29,900	< 5	< 2

- **Conclusions:** These results reveal the presence of lead, cadmium, chromium, and barium in or on the paint in the plating room. If the lead based paint at this facility is scheduled for removal prior to demolition, the client should be aware of possible exposure risks associated with lead, cadmium, chromium, and barium.

- **Wipe Sample Results**

Total RCRA Metals (µg/ft²)

Sample ID	Sample Description	As	Ba	Cd	Cr	Hg	Pb	Se	Ag
NSAM-N121-Wipe-1	Wipe sample from exterior of exhaust hood #1. (100 cm²)	< 14	14	< 2	1,100	2.9	400	< 9	< 3
NSAM-N121-Wipe-2	Wipe sample from the interior of exhaust hood #1. (100 cm²)	17	27	68	24,700	1.7	2,800	< 9	5
NSAM-N121-Wipe-3	Wipe sample from the interior of exhaust hood # 2. (100 cm²)	< 14	632	1,300	7,920	3.6	2,660	< 9	12
NSAM-N121-Wipe-4	Wipe sample from the exterior top of exhaust hood #3. (100 cm²)	<14	682	360	2,450	1.9	2,350	< 9	6
NSAM-N121-Wipe-5	Field blank	< 14	12	< 2	11	< 0.5	18	< 9	< 3
NSAM-N121-Wipe-6	Field blank	< 14	12	< 2	< 4	0.5	16	< 9	< 3

Conclusions: These results reveal the presence of barium, cadmium, chromium, and lead on the interior and exterior surfaces of the exhaust hoods. This data should be used for decisions regarding the disposal, decontamination, or recycling of the exhaust hoods.